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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,384	06/04/1999	TAKASHI ECHIGO	Q54629	2943

7590 12/19/2002

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EXAMINER

PRATS, FRANCISCO CHANDLER

ART UNIT	PAPER NUMBER
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1651

/8

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application N .

09/319,384

Applicant(s)

ECHIGO ET AL.

Examiner

Francisco C Prats

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5,7-17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,7-17 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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**DETAILED ACTION**

The request filed on October 8, 2002, for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/319,384 is acceptable and a CPA has been established. An action on the CPA follows.

The previously unentered after-final amendment filed August 13, 2002, has been entered. The text of those sections of Title 35, U.S. Code, not included in this action can be found in a prior office action.

Claims 2-4, 6 and 18 have been cancelled.

Claims 1, 5, 7-17 and 19 are pending and are examined on the merits.

***Claim Rejections - 35 USC § 102/103***

Claims 1, 5, 8, 15 and 19 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Haars et al (U.S. Pat. 4,432,291).

Haars et al disclose wood binding compositions suitable for binding wood chips together to make particle board, said binding compositions comprising lignin or lignin sulfonate and laccase or catechol oxidase or peroxidase in an aqueous solution. See column 2, line 5, through column 4, line 2. Note that water can

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be considered a deodorant, a flame retardant, a sanitizer, or an insect repellent. Note further that Haars discloses that the prior art enzymes are obtained from the same microorganism sources as disclosed by applicant as being suitable for practice according to the claimed invention. See column 2, lines 27-37. Because applicant discloses that laccase enzymes from the microorganism sources in Haars are suitable for practice of the disclosed invention, Haars' enzymes inherently meet the pH optimum recitation recited in the claims as amended. A holding of anticipation over the cited claims is therefore clearly proper.

However, even if the reference enzymes and the claimed enzymes are not one and the same and there is, in fact, no anticipation, the prior art product would, nevertheless, have rendered the claimed product obvious to one of ordinary skill in the art at the time the claimed invention was made in view of the fact that the selection of a suitable laccase or other oxidase for inclusion in Haars' wood binding composition would have been a routine matter for one of ordinary skill in the art, particularly since the claimed enzyme is disclosed by Haars as being obtainable from the same microorganisms as the claimed enzyme. Thus the claimed invention as a whole was clearly *prima*

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*facie* obvious especially in the absence of sufficient, clear, and convincing evidence to the contrary.

***Claim Rejections - 35 USC § 103***

Claims 1, 5, 7-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haars et al (U.S. Pat. 4,432,291) in view of Conradie (U.S. Pat. 5,399,190).

As discussed above, Haars et al disclose wood binding compositions suitable for binding wood chips together to make particle board, said binding compositions comprising lignin or lignin sulfonate and laccase or catechol oxidase or peroxidase in an aqueous solution. See column 2, line 5, through column 4, line 2. Haars differs from the claims in that Haars' wood binding composition does not include the numerous additional additives recited in claims 7-14. However, Conradie clearly discloses that metal soaps of long chain unsaturated fatty acids such as oleic and linoleic acids act as superior wood preservative agents. See column 1, lines 43-64. Conradie also discloses that the wood preservative compositions disclosed therein may contain any known insecticide and/or fungicide, such as pyrethroid, as well as carrier media such as xylene, as well as emulsifiers. See column 2, lines 21-39. Thus, Conradie demonstrates that the claimed additional metals, unsaturated

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fatty acids and other organics were in fact known wood preserving agents at the time of applicant's invention. Reasonably expecting that adding known wood preserving agents such as those disclosed in Conradie to the enzymatic binder of Haars would have conferred improved properties to Conradie's particle board product, the artisan of ordinary skill would have been motivated to have added known wood preserving agents such as disclosed by Conradie to the enzyme-containing wood binder of Haars.

Moreover, in view of Haars' disclosure of the suitability of peroxidases in the oxidative wood binding composition, the artisan of ordinary skill clearly would have recognized that the hydrogen peroxide required by Haars' peroxidases could have been readily generated enzymatically *in situ*, and would therefore require the presence of the peroxide-generating oxidase enzyme recited in claim 16. The artisan of ordinary skill, recognizing the suitability of generating hydrogen peroxide *in situ* would therefore have been motivated to have included in the enzymatic wood binding composition a peroxide-generating oxidase enzyme, as recited in claim 16. A holding of obviousness is therefore clearly required.

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Claims 1, 5, 7-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haars et al (U.S. Pat. 4,432,291) in view of Conradie (U.S. Pat. 5,399,190), and in further view of Schneider et al (WO 95/01426).

As discussed above, claims 1, 5, 7-16 and 19 are either anticipated by Haars, or rendered obvious over Haars when viewed in light of Conradie. Neither Haars nor Conradie disclose the suitability of an enzyme obtainable from *Myrothecium*, as recited in applicant's claim 17, as the oxidase in the preparation of Haars' wood binding composition. However, Schneider discloses numerous compositions for various applications, said compositions comprising an enzyme which may be a laccase, catechol oxidase, bilirubin oxidase from *Myrothecium*, or monophenol monooxygenase (see p. 19, lines 1-27). Schneider's compositions also comprise lignin (see p. 6, line 35 through p.7, line 4), for use in polymerizing lignin so as to prepare wood composites such as chipboard or fiberboard (see claim 18, at p. 46, line 29 through p. 47, line 2). Thus, the artisan of ordinary skill would have reasonably expected that Schneider's bilirubin oxidase from *Myrothecium* would have been useful to polymerize the lignosulfonate in Haars' wood binding composition, based on Schneider's disclosure of the polymerization of chemically similar lignin, which contains the

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same phenolic moiety as lignin sulfonate required for oxidative enzymatic polymerization. Based on this reasonable expectation of the suitability in Haars' composition of Schneider's bilirubin oxidase from *Myrothecium*, the artisan of ordinary skill would have been motivated to have included Schneider's bilirubin oxidase from *Myrothecium* in Haars' wood binding composition. A holding of obviousness is therefore required.

No claims are allowed.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francisco C Prats whose telephone number is 703-308-3665. The examiner can normally be reached on Monday through Friday, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G Wityshyn can be reached on 703-308-4743. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

  
Francisco C Prats  
Primary Examiner  
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FCP  
December 18, 2002